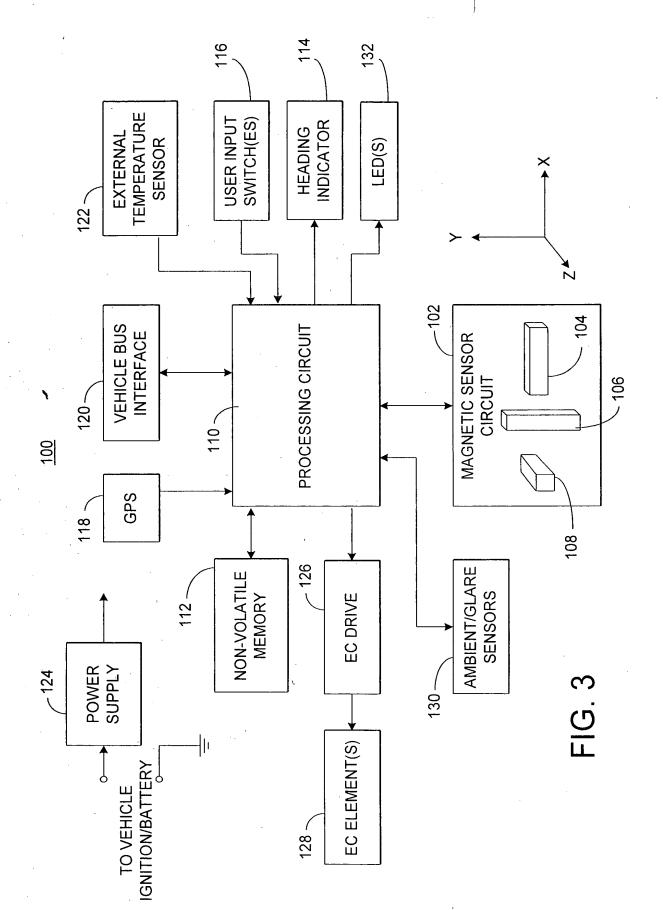
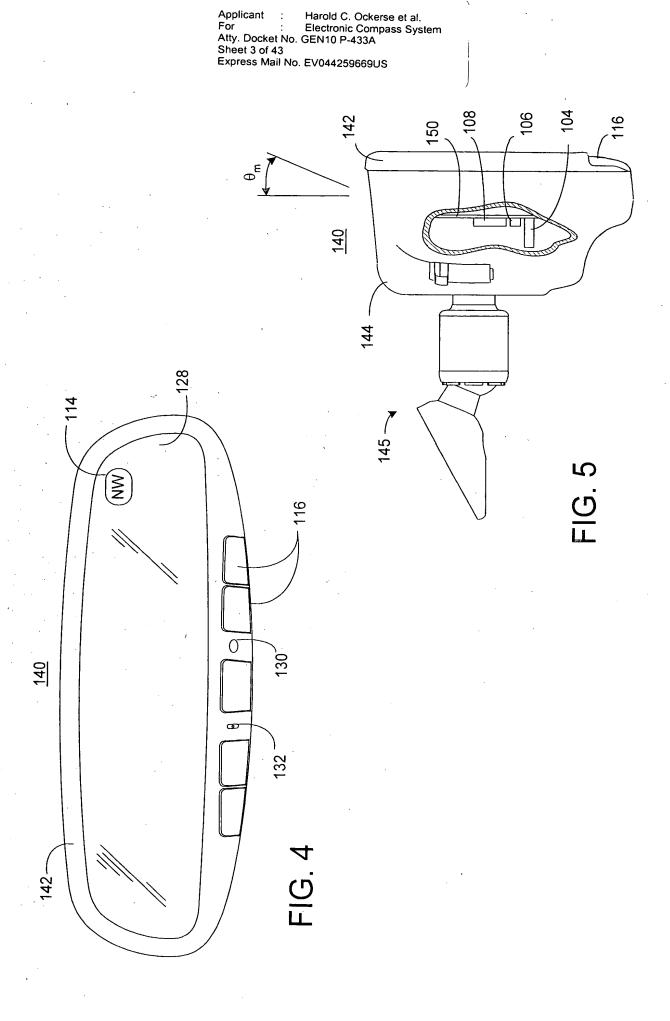
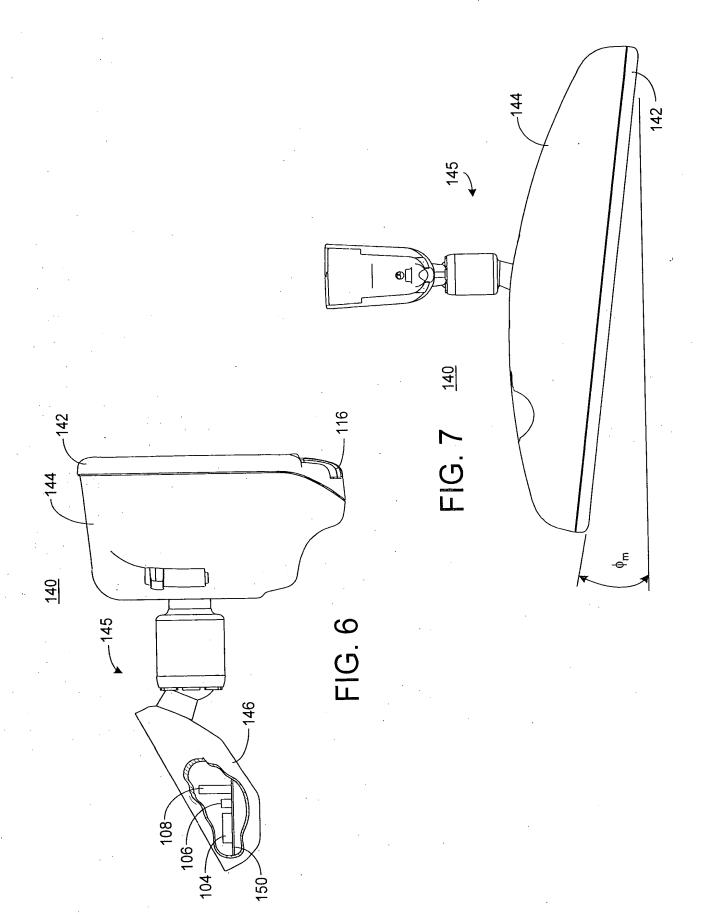


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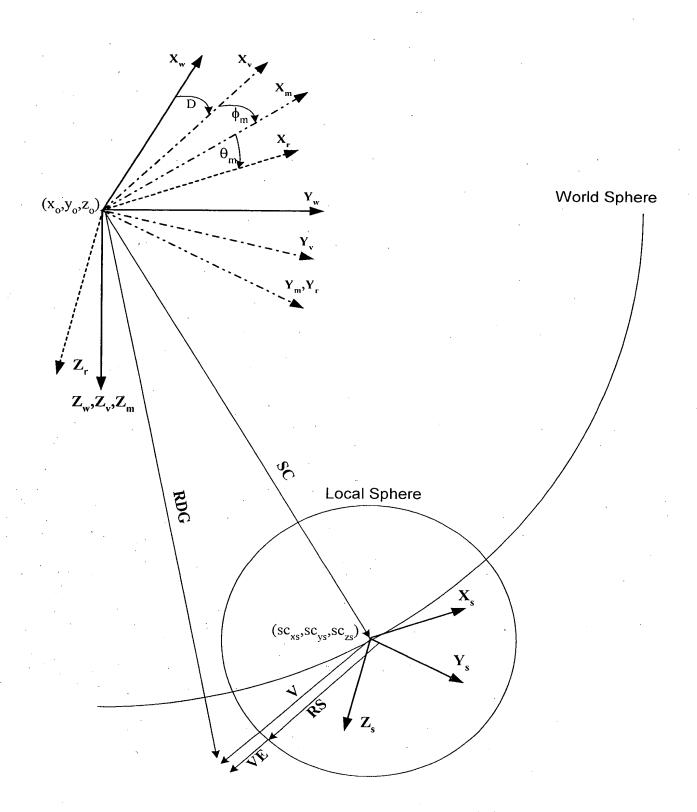
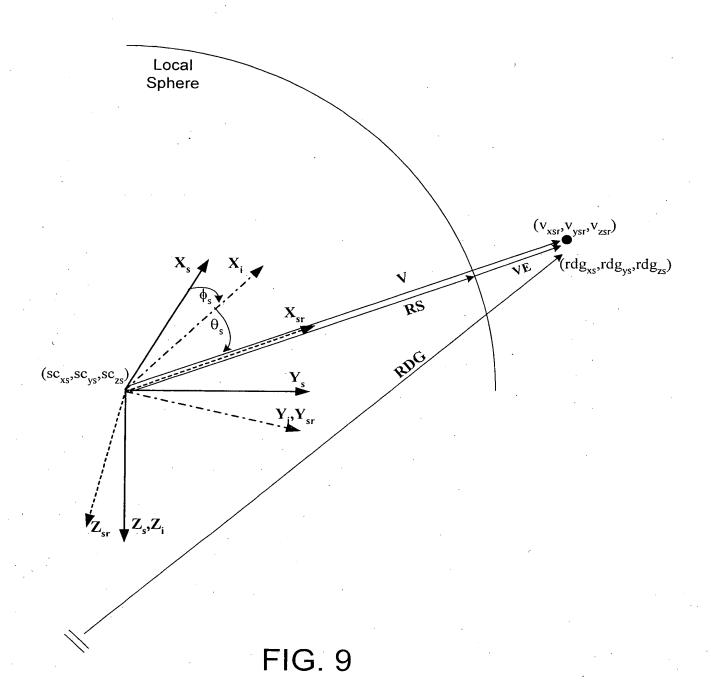


FIG. 8

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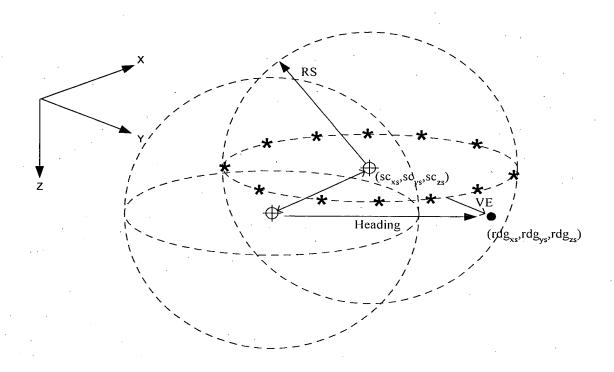


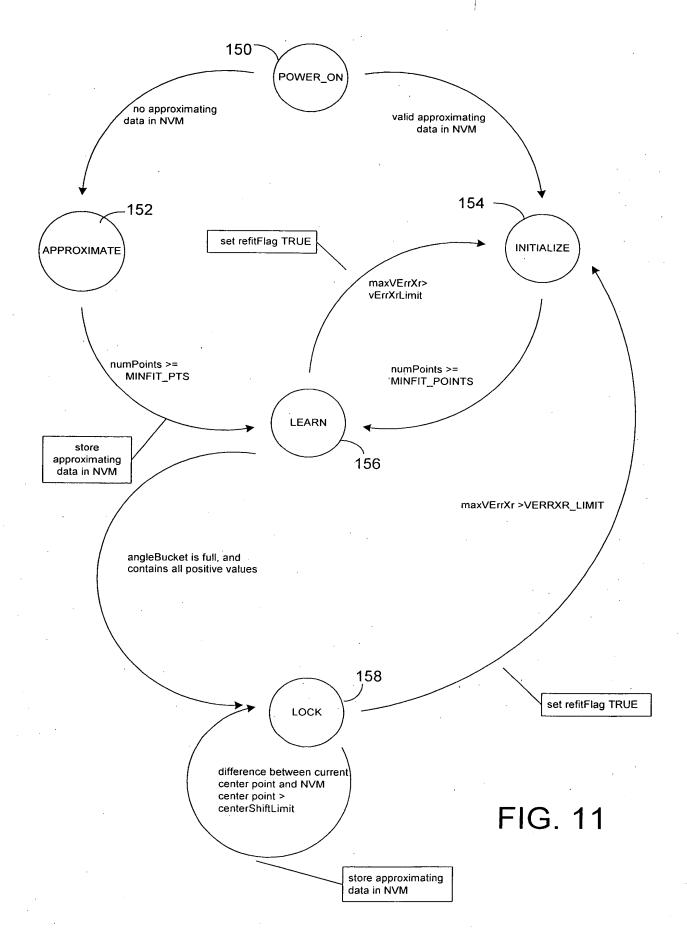
FIG. 10

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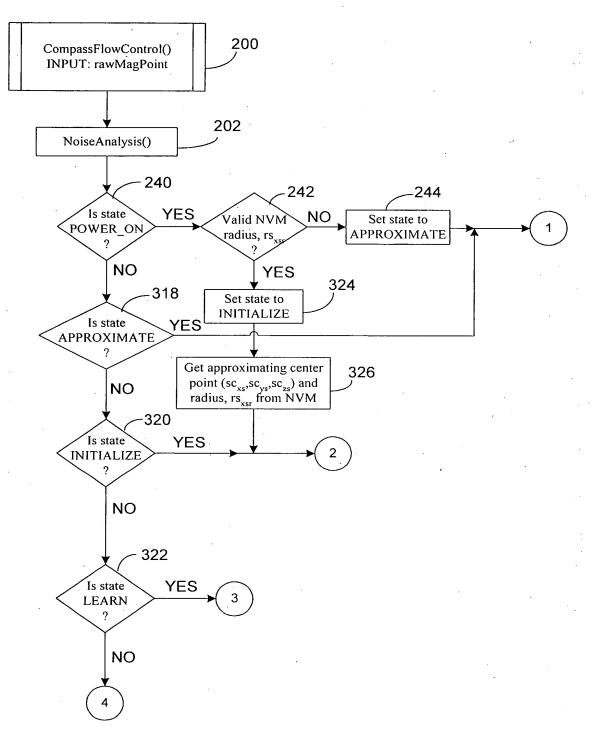


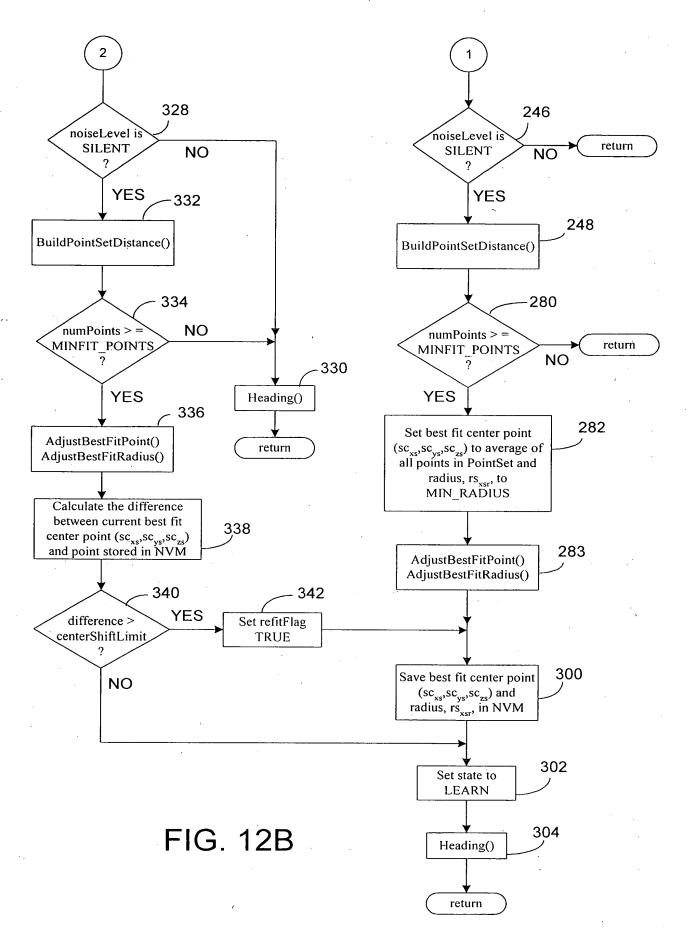
FIG. 12A

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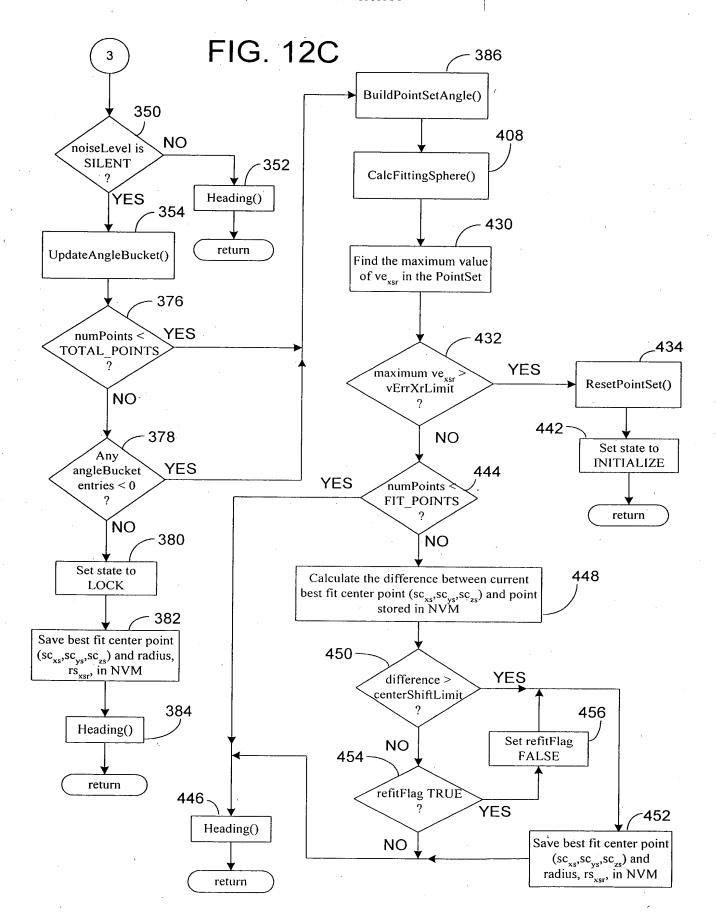


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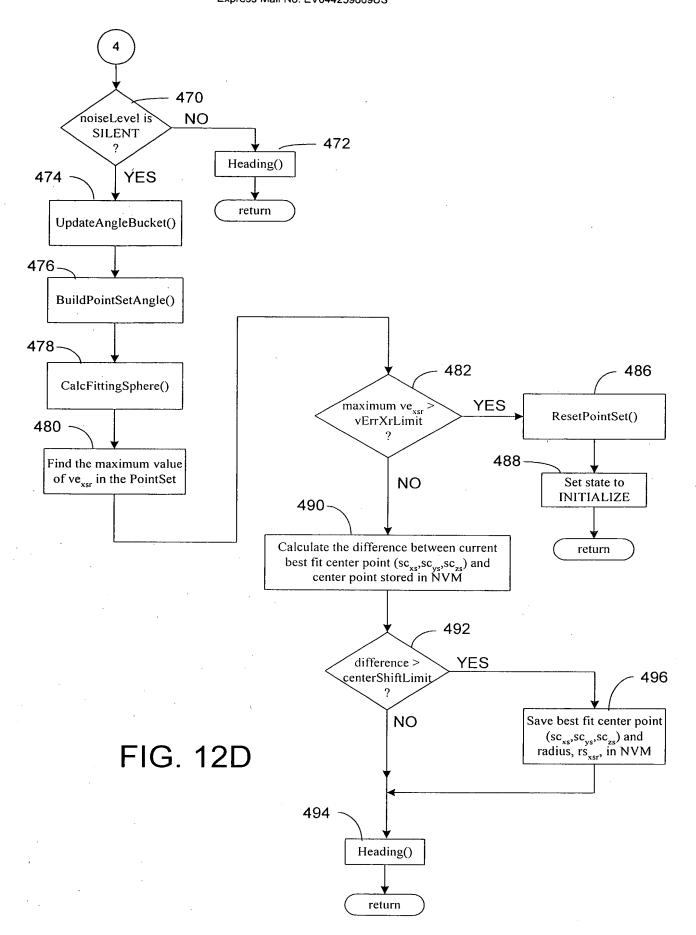
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Sheet 13 of 43 Express Mail No. EV044259669US NoiseAnalysis() 204 INPUT: rawMagPoint OUTPUT: newMagPoint $EX1_{n} = \alpha_{x1} \times X1_{n} + (1 - \alpha_{x1})EX1_{n-1}$ $EYl_{n}^{n} = \alpha_{vl}^{n} \times Yl_{n}^{n} + (1 - \alpha_{vl}^{n})EYl_{n-1}^{n}$ 206 $EZ1_{n}^{"} = \alpha_{z1}^{"} \times Z1_{n}^{"} + (1 - \alpha_{z1}^{"})EZ1_{n-1}^{"}$ where $\alpha_{x1} = \alpha_{y1} = \alpha_{z1} = 0.5$ and $(X1_n, Y1_n, Z1_n) = rawMagPoint$ FIG. 13 $EX2_{n} = \alpha_{x2} \times EX1_{n} + (1 - \alpha_{x2})EX2_{n-1}$ $EY2_{n}^{"} = \alpha_{y2}^{"} \times EY1_{n}^{"} + (1 - \alpha_{y2}^{"})EY2_{n-1}^{"}$ 208 $EZ2_{n}^{"} = \alpha_{z2}^{"} \times EZ1_{n}^{"} + (1 - \alpha_{z2}^{"})EZ2_{n-1}^{"}$ where $\alpha_{x2} = \alpha_{y2} = \alpha_{z2} = 0.25$ 210 newMagPoint = (EX2_n,EY2_n,EZ2_n) 212 $DX1_{n} = EX1_{n} - EX2_{n-1}$ $DY1_{n}^{n} = EY1_{n}^{n} - EY2_{n-1}^{n-1}$ $DZ1_{n}^{n} = EZ1_{n}^{n} - EZ2_{n-1}^{n-1}$ 214 $DX2_{n} = DX1_{n} - DXI_{n-1}$ $DY2_{n}^{n} = DY1_{n}^{n} - DY1_{n-1}^{n-1}$ $DZ2_{n}^{n} = DZ1_{n}^{n} - DZ1_{n-1}^{n-1}$ $D2_{n}^{n} = SQRT(DX2_{n}^{n-1} + DY2_{n}^{n-1} + DZ2_{n}^{n-1})$ 224 216 228 220 NO Magnitude D2_n Magnitude D2_n NO Magnitude D2_n NO decrement HIGH_LEVEL LOW_LEVEL MED LEVEL delayCounter 218 YES - 222 226 YES YES delayCounter = delayCounter = delayCounter = MAX(delayCounter, MAX(delayCounter, LONG DELAY MED DELAY) SHORT_DELAY) noiseLevel = NOISY noiseLevel = NOISY noiseLevel = NOISY return return return 234 230 232 YES NO delayCounter noiseLevel = QUIET noiseLevel = SILENT > 0 return return

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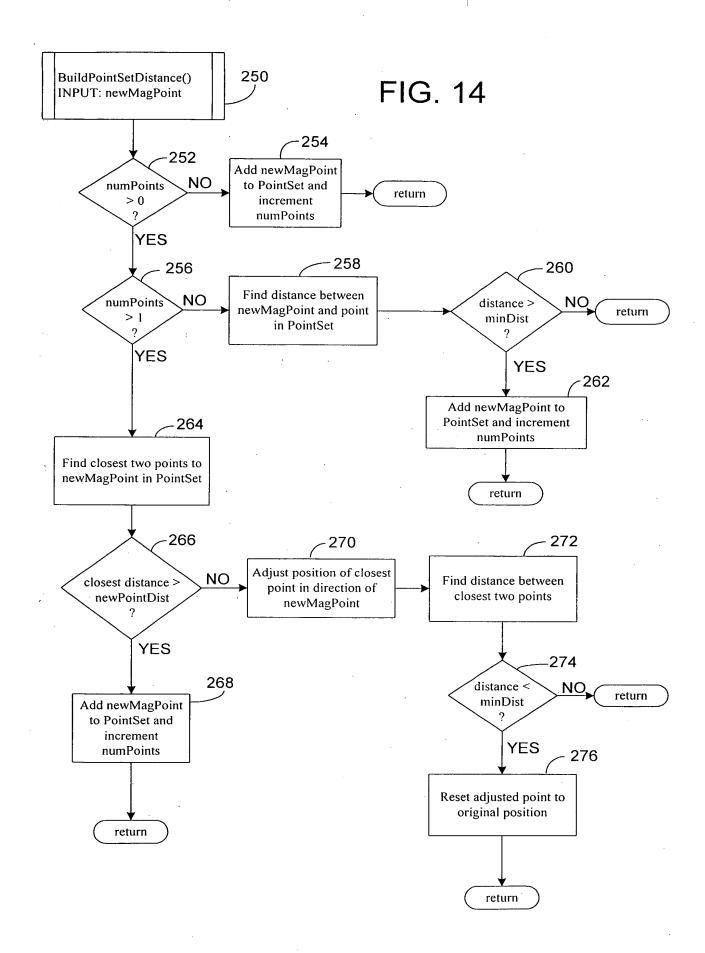
Electronic Compass System

Applicant

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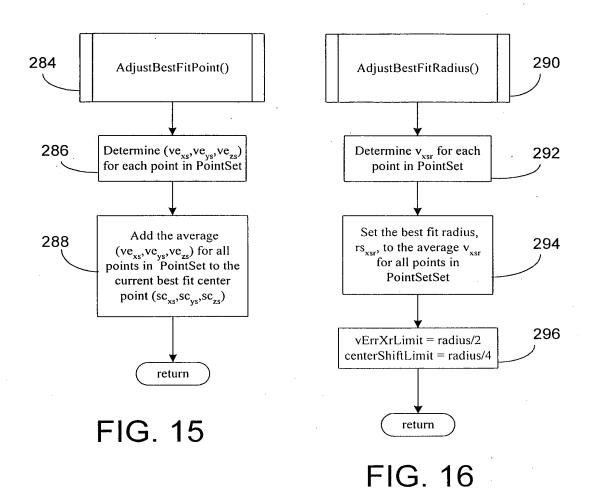
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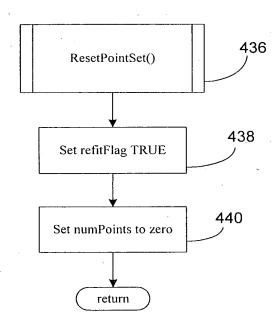
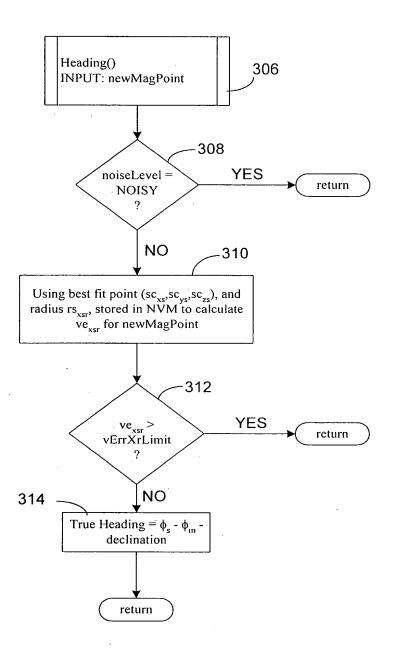


FIG. 21

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FIG. 17

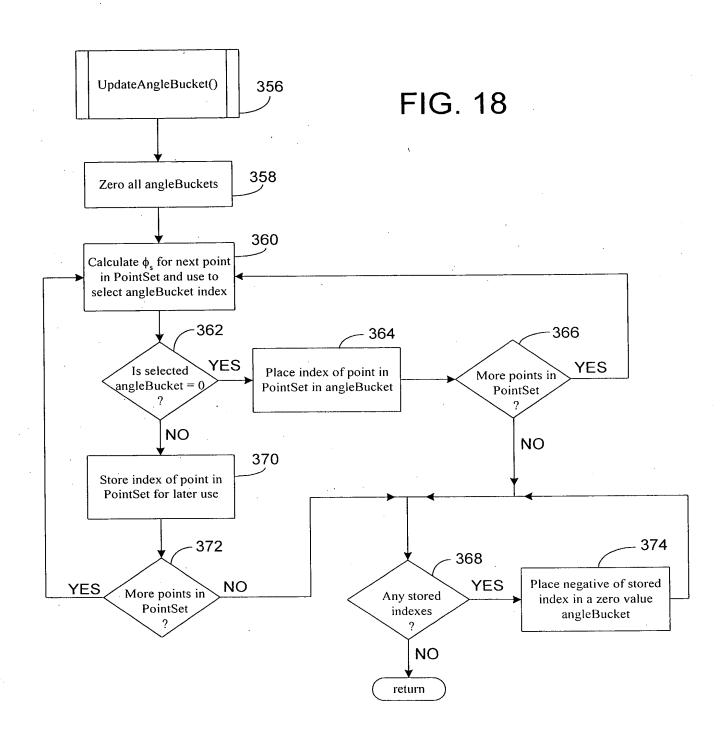


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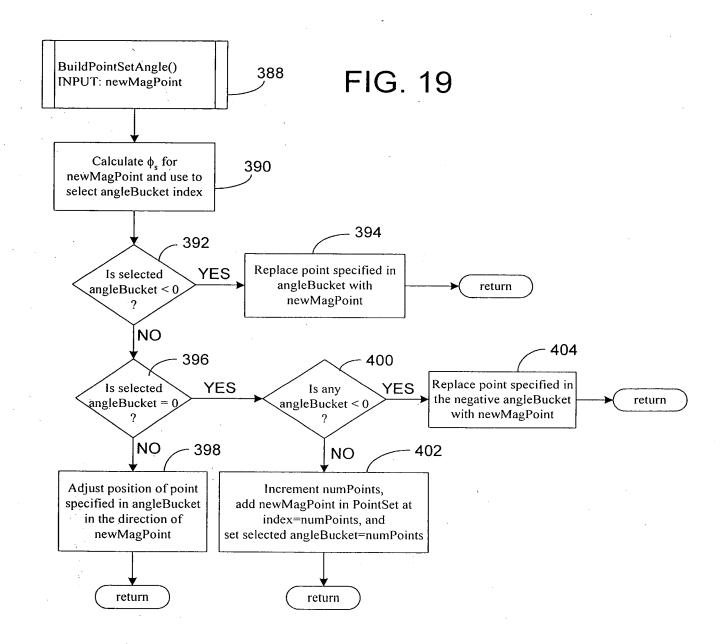
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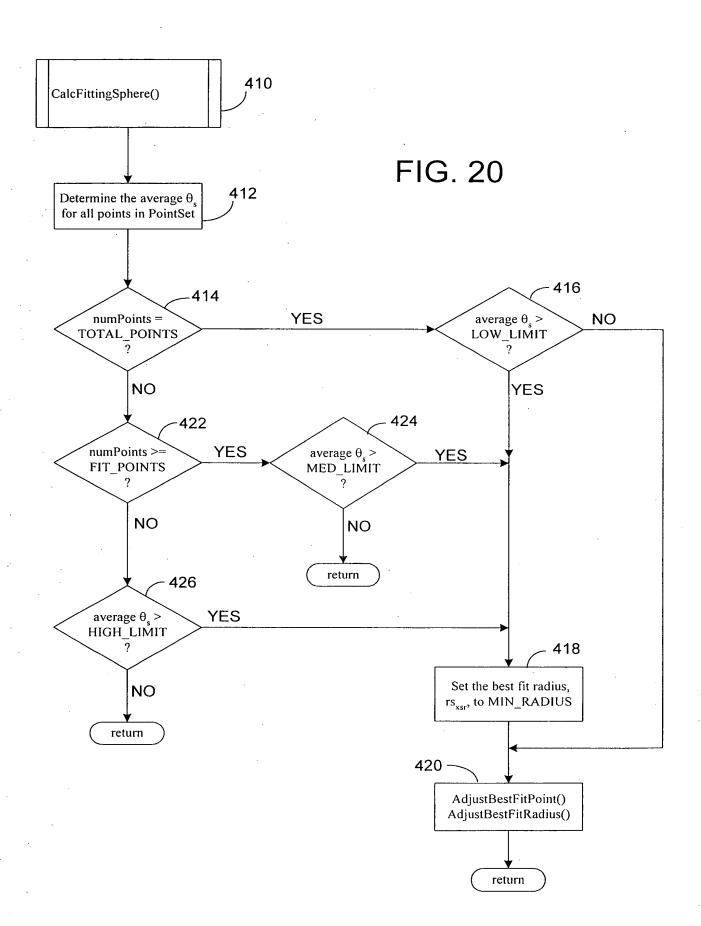


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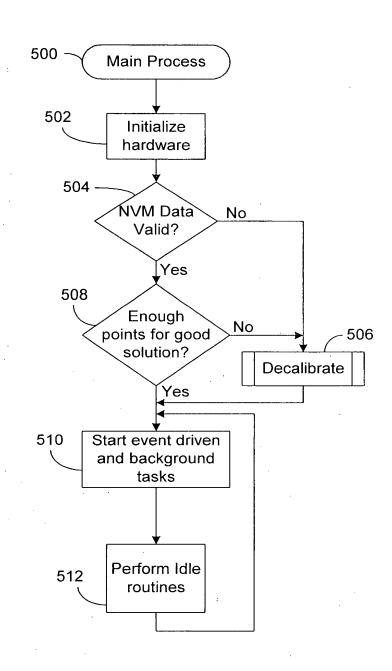


FIG. 22A

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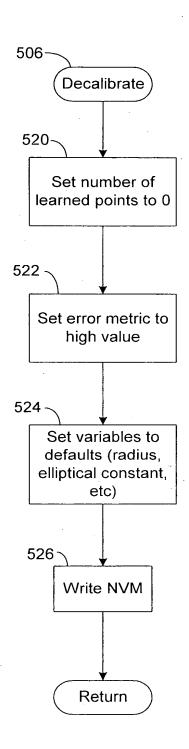
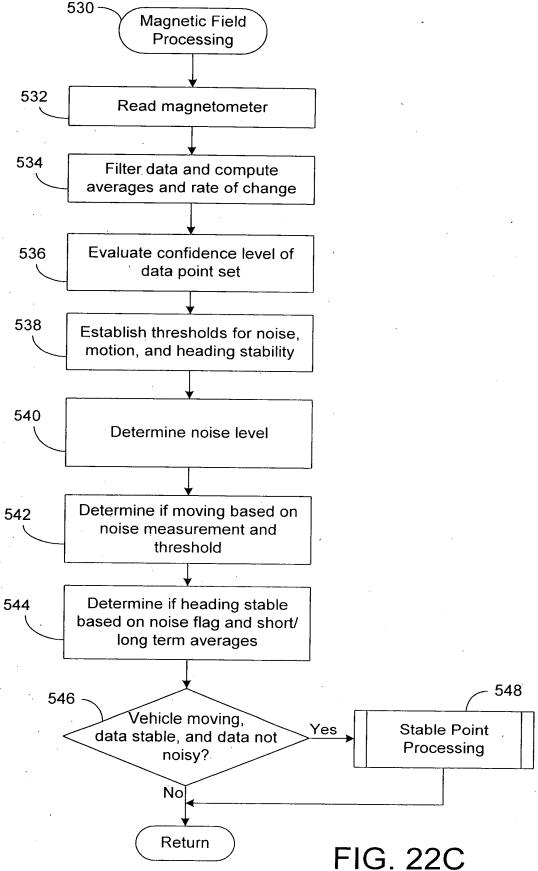


FIG. 22B

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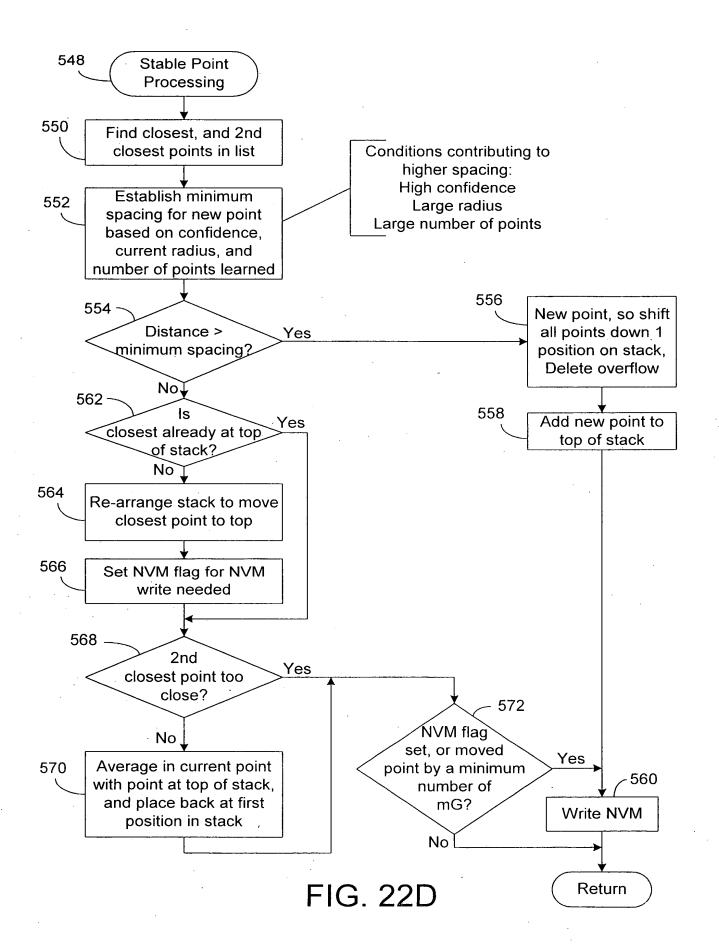


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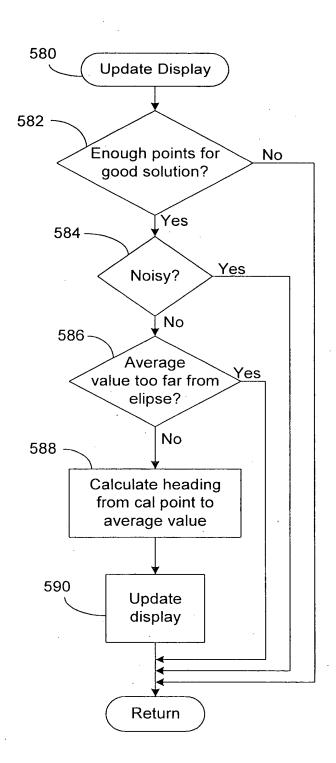


FIG. 22E

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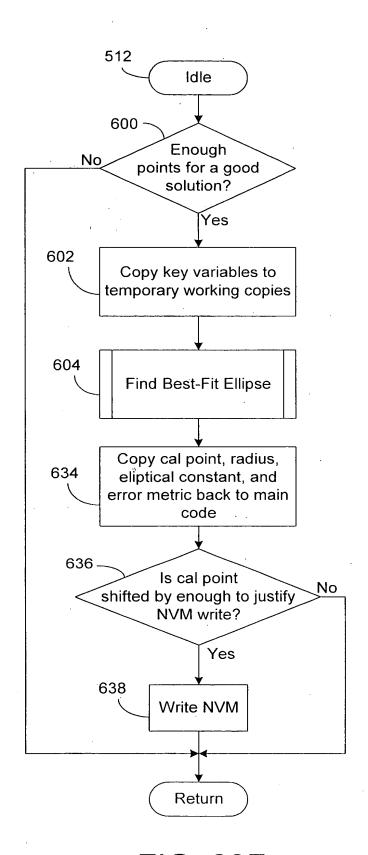


FIG. 22F

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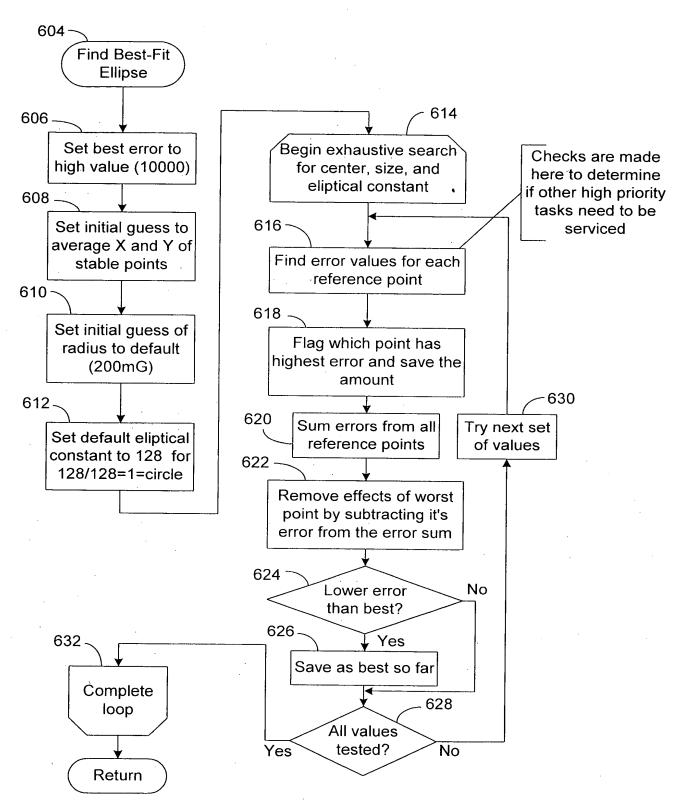


FIG. 22G

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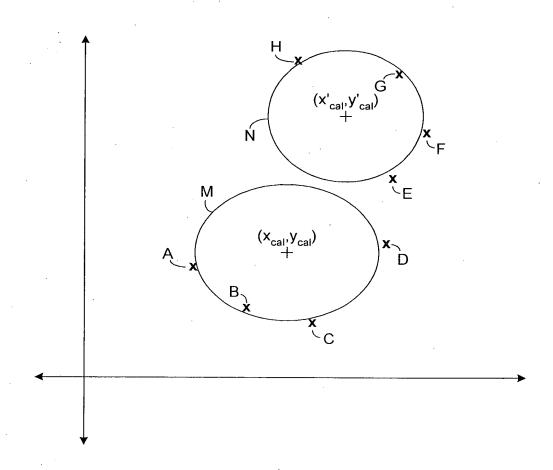
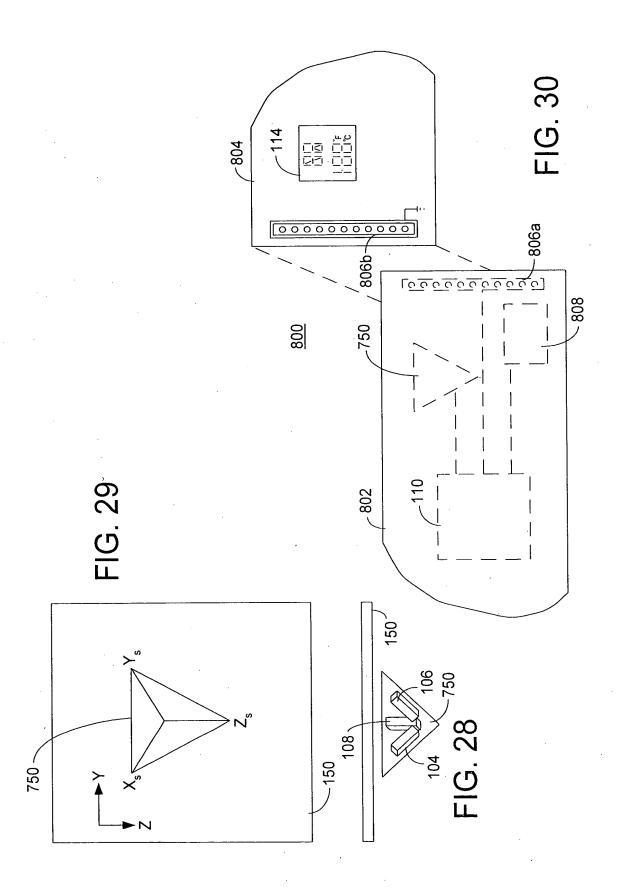


FIG. 23

Sheet 28 of 43 Express Mail No. EV044259669US 142 720 150 FIG. 27 140 720 144 150-FIG. 25 150 FIG. 26 145 108 104 FIG. 24C FIG. 24B FIG. 24A FIG. 24D 150a 104 104 702 150a -700 106 -150a _150b 700 106 106 106 150b 104 150b~ 108 108-108-150 150 ~ 150 150

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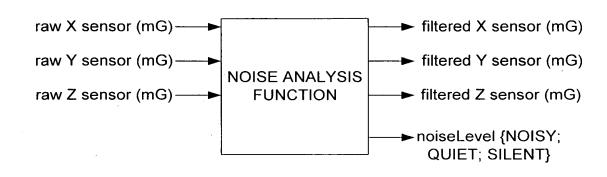


FIG. 31

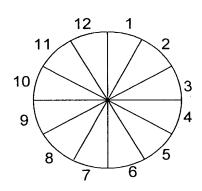
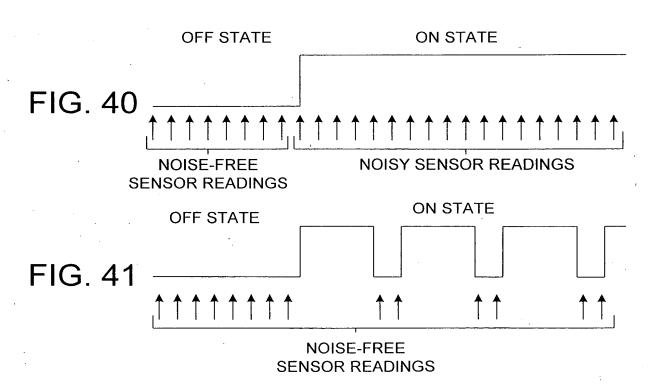


FIG. 35



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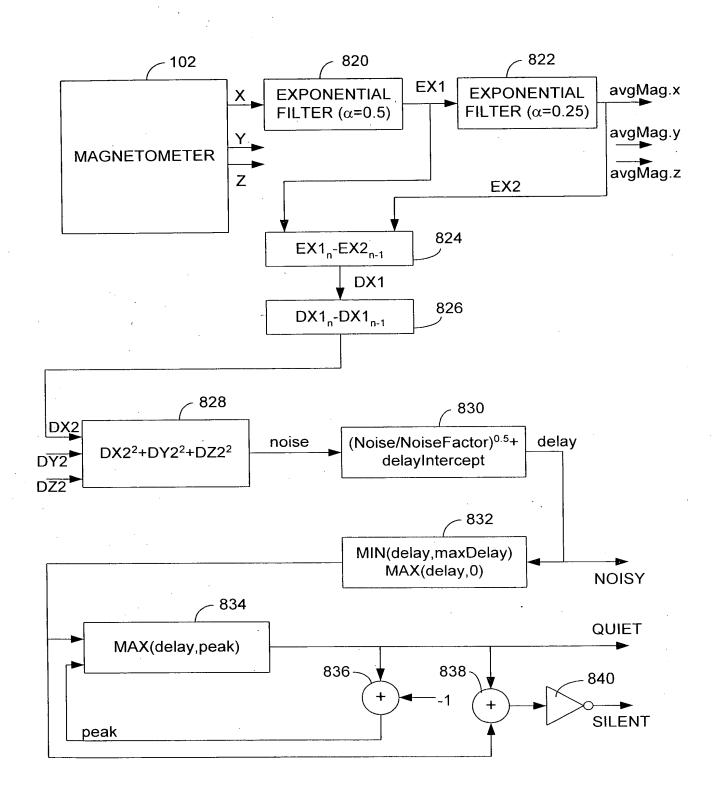
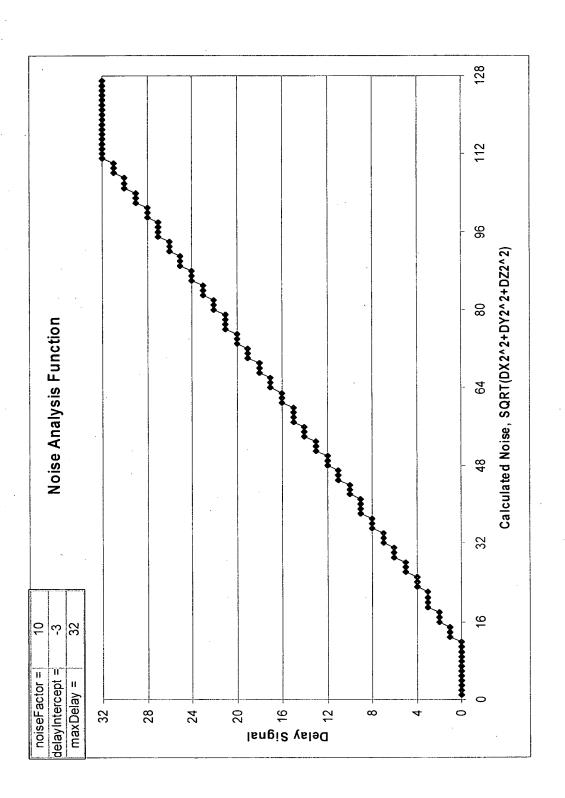
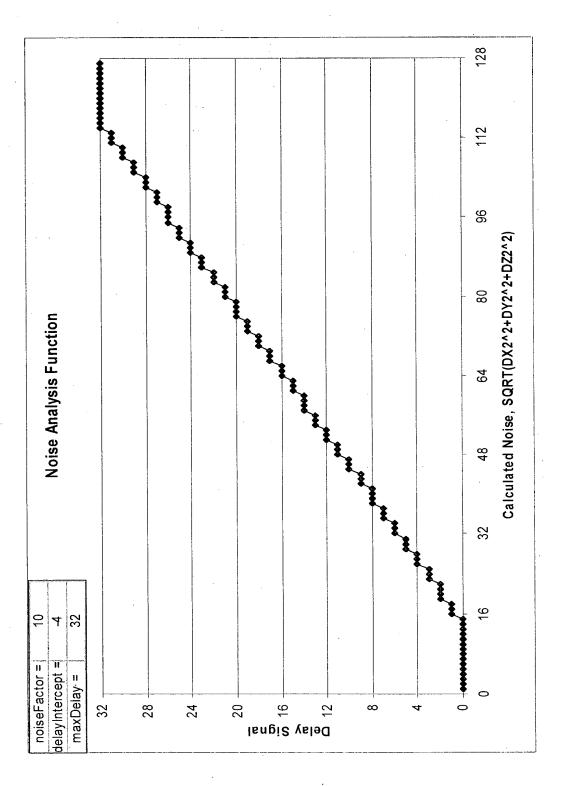


FIG. 32

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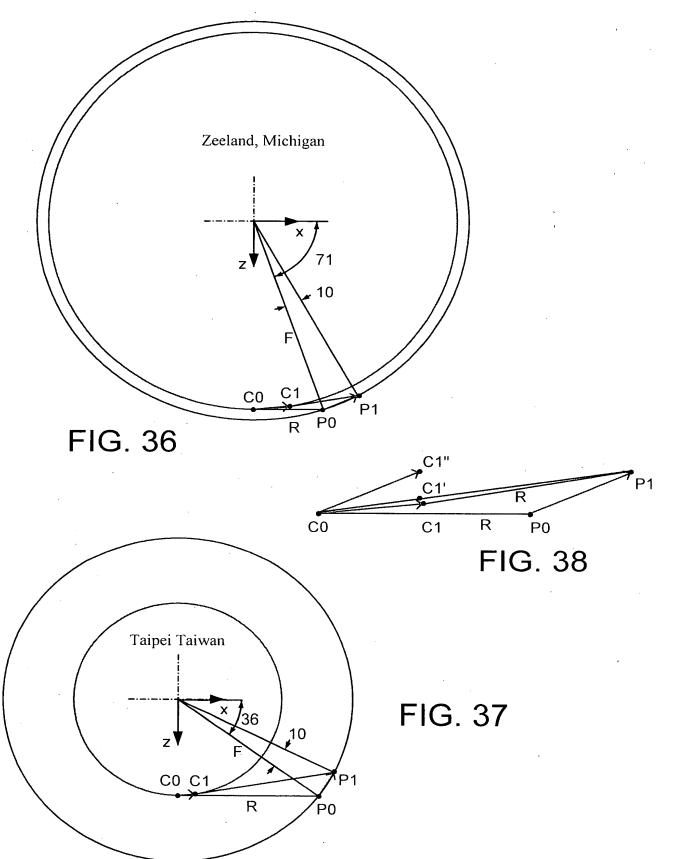


. 34

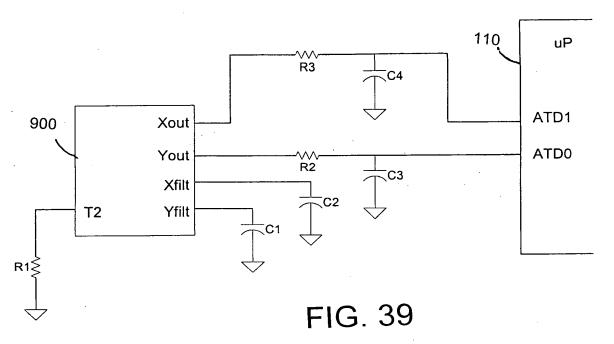


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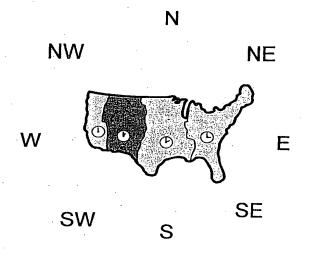
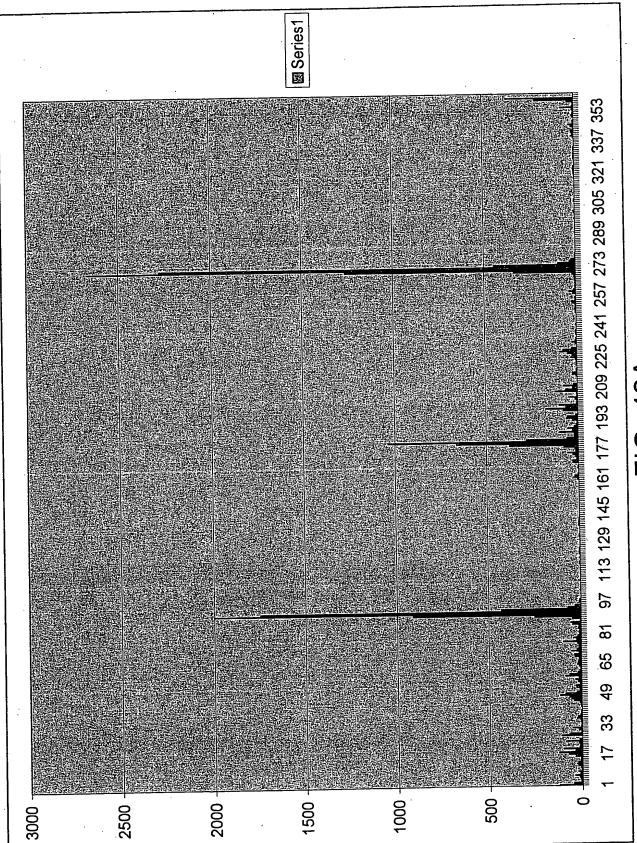
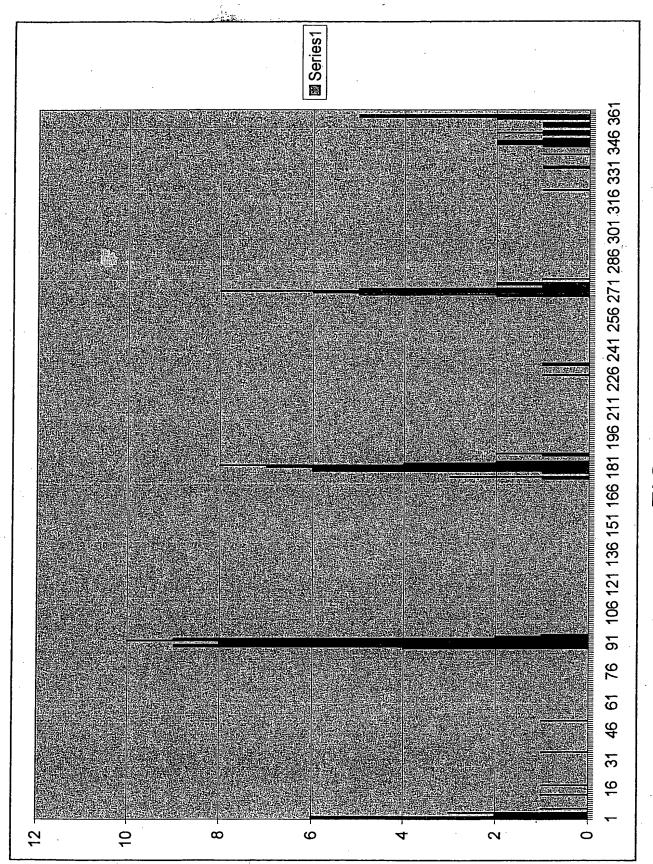


FIG. 43

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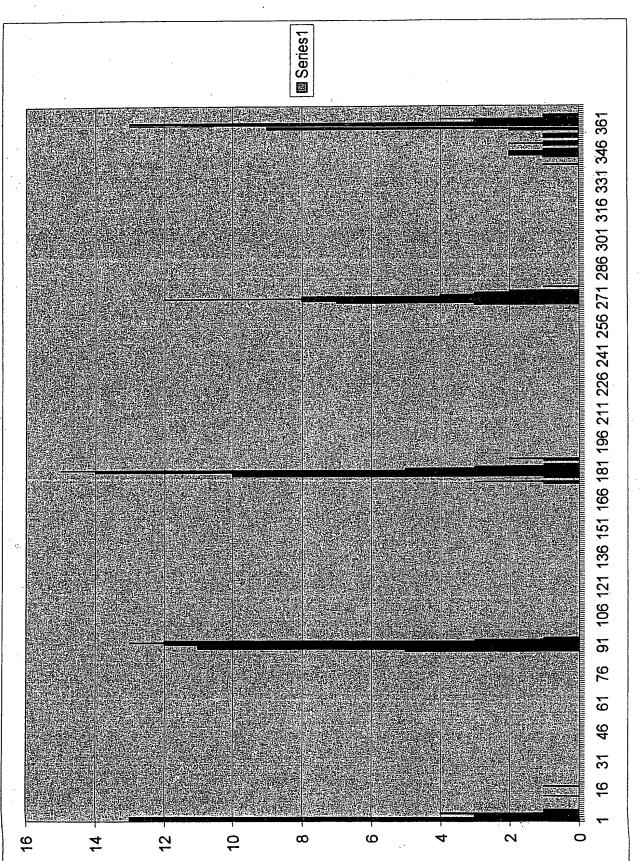
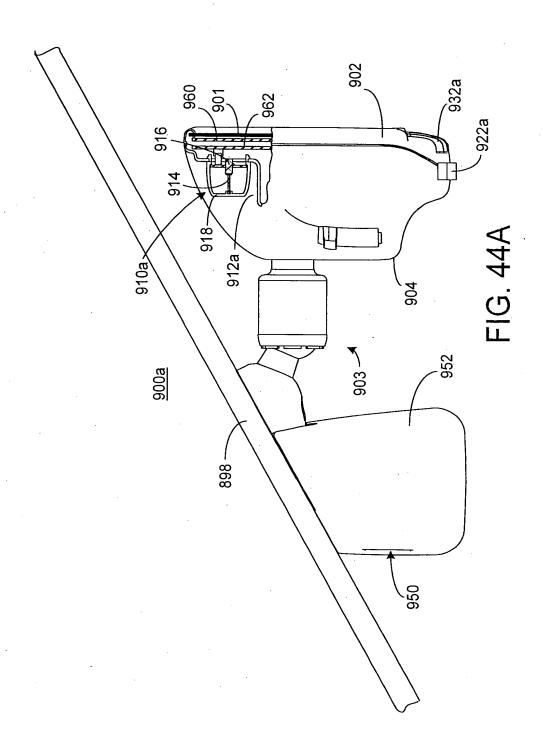
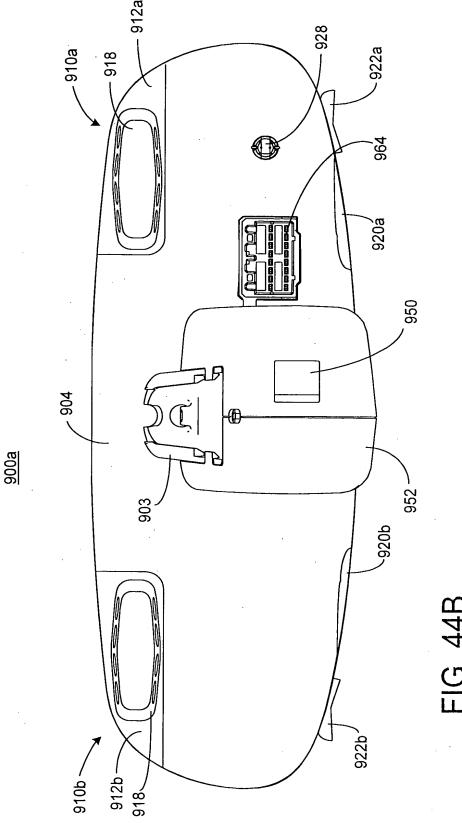


FIG. 42C

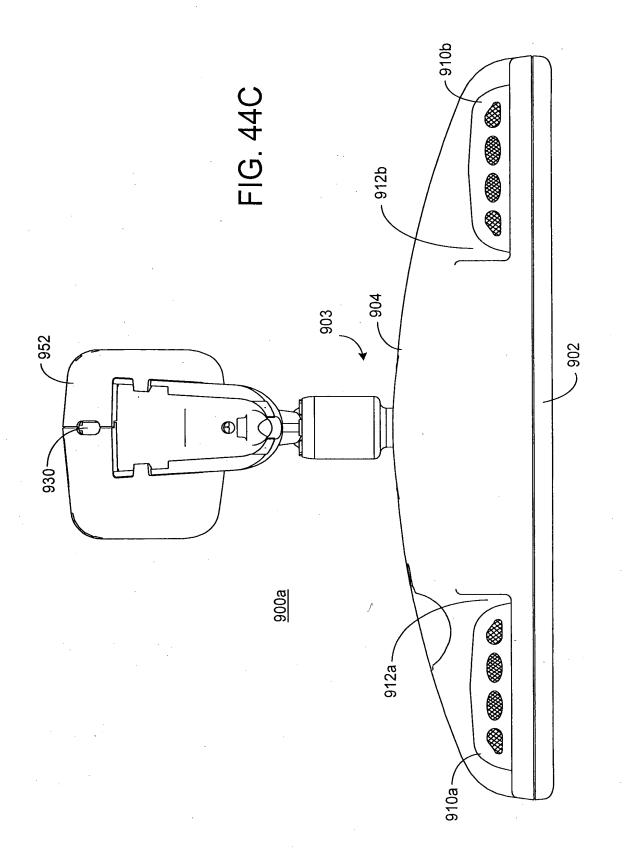
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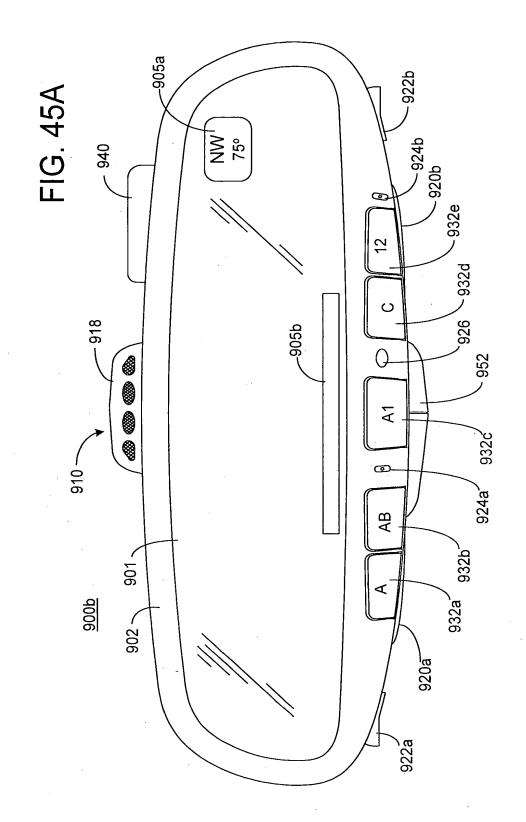
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